

10/009586 #3/a

PATENT

Customer Number 22,852

Attorney Docket No. 7040.0108.00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
)
Antonio PRONI et al.)
)
Serial No.: Not yet assigned) Group Art Unit: Not yet assigned
)
Filed: December 11, 2001) Examiner: Not yet assigned
)
For: PROCESSING METHOD OF A)
MIXTURE FOR TYRE RUBBER)
COMPOUND)

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

Prior to the examination of the above-captioned application, please amend this application as follows:

IN THE SPECIFICATION:

Please amend the specification, as follows:

Add two section headings, a section subheading, and a paragraph immediately after the title PROCESSING METHOD OF A MIXTURE FOR TYRE RUBBER COMPOUND, as follows:

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--CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a national stage entry under 35 U.S.C. § 371 from International Application No. PCT/EP01/04130, filed April 10, 2001, in the European Patent Office; additionally, Applicants claim the right of priority under 35 U.S.C. § 119(a) - (d) based on patent application No. MI2000A000841, filed April 14, 2000, in the Italian Patent Office; further, Applicants claim the benefit under 35 U.S.C. § 119(e) based on prior-filed, copending provisional application No. 60/231,698, filed September 11, 2000, in the U.S. Patent and Trademark Office; the contents of all of which are relied upon and incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention--

Page 1, line 14, add section subheading --Description of the Related Art-- prior to the start of the paragraph beginning "European patent application No. 99.830189.9"

Page 3, line 14, add section heading --SUMMARY OF THE INVENTION-- prior to the start of the paragraph beginning "The object of the present invention"

Page 4, line 32, add section heading --BRIEF DESCRIPTION OF THE DRAWINGS-- prior to the start of the paragraph beginning "Further characterising features"

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Page 5, line 14, add section heading --DETAILED DESCRIPTION OF THE
PREFERRED EMBODIMENTS-- prior to the start of the paragraph beginning "With reference
to the figures listed above"

Add a new Page 23 after the claims, adding the following ABSTRACT OF THE
DISCLOSURE. A new, separate Page 23 including the ABSTRACT OF THE DISCLOSURE is
enclosed.

--ABSTRACT OF THE DISCLOSURE

A method for processing a rubber mixture or compound for tyre manufacturing includes
the steps of determining variation tolerances with respect to reference values for process
parameters, detecting values of the process parameters, comparing detected values of the process
parameters with the reference values and the variation tolerances, attributing an evaluation to a
semi-finished product depending on compliance or noncompliance of the detected values with
the reference values and the variation tolerances, classifying the semi-finished product on a basis
of the attributed evaluation, and establishing successive steps for processing the semi-finished
product depending on the classification of the semi-finished product. The processing includes at
least a mixing cycle and an extrusion cycle for obtaining the semi-finished product. The cycles
are controlled by the process parameters detected during execution of the cycles.--

IN THE CLAIMS:

Please cancel, without prejudice or disclaimer, claims 2-13, and add new claims 14-26, as
follows:

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--14. (new) A method for processing a rubber mixture or compound for tyre manufacturing, comprising the steps of:

- a) determining variation tolerances with respect to reference values for process parameters;
- b) detecting values of the process parameters;
- c) comparing the detected values of the process parameters with the reference values and the variation tolerances;
- d) attributing an evaluation to a semi-finished product depending on compliance or noncompliance of the detected values with the reference values and the variation tolerances;
- e) classifying the semi-finished product on a basis of the attributed evaluation; and
- f) establishing successive steps for processing the semi-finished product depending on the classification of the semi-finished product;

wherein the processing comprises at least a mixing cycle and an extrusion cycle for obtaining the semi-finished product, and wherein the cycles are controlled by the process parameters detected during execution of the cycles.

15. (new) The method of claim 14, wherein steps b) through f) are performed in an automated manner.

16. (new) The method of claim 14, wherein the process parameters detected comprise one or more of:

duration of at least part of the mixing cycle;

temperature and energy absorbed by the rubber mixture or compound during at least part of the mixing cycle; and

duration of an extraction operation.

17. (new) The method of claim 16, wherein the mixing cycle is performed with at least one mixer comprising a pair of rotors, and wherein the pair of rotors operate tangentially relative to each other (Banbury[®]-type) or are inter-penetrating (Intermix[®]-type).

18. (new) The method of claim 17, wherein coefficients, indicating the compliance or noncompliance of the detected values with the reference values and the variation tolerances, are attributed to the process parameters detected during the mixing cycle, and wherein the evaluation of the semi-finished product is performed by adding together the coefficients attributed and comparing a sum of the coefficients attributed with a reference classification.

19. (new) The method of claim 18, wherein the extraction operation is performed using at least one single-screw or double-screw extruder associated with a pair of calendering rolls.

20. (new) The method of claim 19, wherein the calendering rolls are of a friction type, a variable-speed type, or a friction and variable-speed type.

21. (new) The method of claim 18, wherein the extraction operation is performed using at least one single-screw or double-screw extruder and at least one mixer of an open type.

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22. (new) The method of claim 16, wherein a stay time in an extruder is detected for the extraction operation, and wherein the evaluation of the semi-finished product is performed by comparing the detected stay time with a reference classification.

23. (new) The method of claim 22, wherein the semi-finished product is marked downstream from the extraction operation to enable identification and separation of the semi-finished product from other semi-finished products obtained prior to, subsequent to, or prior to and subsequent to the semi-finished product.

24. (new) The method of claim 23, wherein the processed rubber mixture or compound comprises silica as a reinforcing element.

25. (new) The method of claim 24, wherein ingredients of the compound, per hundred parts-by-weight of polymeric base (phr), comprise:

| | |
|-------------------------|-----------------------|
| Polymeric base | 100 phr; |
| Carbon black | 0-80 phr; |
| Silica | 10-80 phr; |
| Bonding agent | 4%-15% of the silica; |
| Zinc oxide (ZnO) | 1-3 phr; |
| Stearic acid | 0-3 phr; |
| Anti-degradation agents | 1-3 phr; |
| Plasticizing oil | 0-30 phr; |
| Anti-ozone wax | 0.5-3 phr; and |

Specific chemical ingredients

0-15 phr.

26. (new) The method of claim 25, wherein characteristics of the compound, when vulcanized for 30 minutes at 151°C, comprise:

| Characteristic | | Mean value | Variability |
|---------------------------|----------------------|------------|-------------|
| Density | (g/cm ³) | 1.196 | ±0.004; |
| 100% modulus (CA1) | (MPa) | 2.3 | ±0.2; |
| 300% modulus (CA3) | (MPa) | 9.8 | ±0.6; |
| Ultimate tensile strength | (MPa) | >15.0; | |
| Ultimate elongation | (%) | >400; and | |
| Hardness | (IRHD) | 73 | ±2; |

wherein IRHD stands for International Rubber Hardness Degrees.--

REMARKS

Applicants submit this Preliminary Amendment together with a national stage entry under 35 U.S.C. § 371.

In this Preliminary Amendment, Applicants add section headings, section subheadings, and an Abstract of the Disclosure to conform to U.S. practice. Additionally, Applicants add claims to the right of priority and benefit. Further, Applicants cancel, without prejudice or disclaimer, claims 2-13, and add new claims 14-26, which include the same subject matter as the original claims, to improve clarity. The originally-filed specification, claims, abstract, and drawings fully support the amendments to the specification and the addition of new claims 14-26. No new matter was introduced.

If there is any fee due in connection with the filing of this Preliminary Amendment,
please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

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Dated: December 11, 2001

By: _____

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